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STATE OF KANSAS.

DEPARTMENT OF
THE STATE BOARD OF HEALTH.

Hotel Inspection Law.

Rules and Regulations.

Suggestions to Inspectors, Etc.

Second Edition,
May, 1911.

STATE PRINTING OFFICE,
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Officers of the Department.

S. J. CRUMBINE, M. D.,

Secretary State Board of Health and Chief Food and Drug
Inspector, Topeka, Kan.

WILLIAM J. V. DEACON,

Assistant Chief Food and Drug Inspector.

Six Traveling Department Inspectors.

Local Fire Marshals or Fire Chiefs.

Local Health Officers.

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C. & S. May 1912

Kansas Hotel Inspection Law.

CHAPTER 148—SESSION LAWS OF 1909.

CHAPTER 51, SECTIONS 4005 TO 4021 INCLUSIVE, GENERAL
STATUTES, 1909.

AN ACT relating to public health and safety, and providing for the regulation and inspection of hotels and public lodging-houses, empowering the State Board of Health to make rules and regulations in relation thereto, and providing penalties for the violation thereof.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. Any building or structure kept, used or maintained as, or advertised as, or held out to the public to be, and every hotel or public lodging-house or place where sleeping accommodations are furnished for pay to transient guests, whether with or without meals, shall, for the purposes of this act, be defined to be a hotel. And whenever the word hotel shall occur in this act it shall be construed to mean every such structure as is described in this section.

SEC. 2. Every hotel that is more than two stories high shall be provided with a hall on each floor extending from one outside wall to the other, and each end of such hall shall be equipped with an ample opening and with an iron fire-escape on the outside of the building, connected with each floor above the first, and at each opening to such fire-escape a red light shall be placed and kept burning during all hours in the night-time. An automatic gong shall be placed near the center of the building on each floor which can be operated from the office or ground floor. And in all hotels containing fifty or more rooms a competent night-watch shall be kept on duty from nine P. M. to six A. M., whose duty it shall be to patrol the house not less than once every hour, and which hotel operator shall

provide such watchman with a time-keeper or some suitable device made to insure the punctual performance of his duty. Such fire-escapes shall be well fastened and secured, and shall have a landing not less than six feet in length and three feet in width, guarded by an iron rail not less than thirty inches in height, at each floor above the ground floor. Such landings shall be connected with each other by iron stairways not less than two feet wide, with steps of not less than six inch tread, placed at an angle of not more than forty-five degrees, and protected by well-secured hand-rails on both sides of such stairways and reaching to the first floor above the ground floor, and with a drop-ladder twelve inches wide from the lower platform reaching to the ground from the lower platform. Such fire-escape shall be sufficient if a perpendicular iron ladder to be used between the platforms instead of the stairways, provided such ladder is placed at the extreme outside of the platforms and at least three feet from the wall of the building, and provided said ladder is equipped with iron rounds not more than fifteen inches apart and not less than three-quarters of an inch in thickness. The way of egress to such fire-escapes shall at all times be kept clear and free from all obstructions of every nature and kind. Storm-doors and storm windows shall be considered obstructions, for the purposes of this act, and such way of egress shall at all times be kept unbolted. There shall be posted and maintained in a conspicuous place in each hall, except the halls on the ground floor, a printed notice, in characters not less than three inches high, in each hall, calling attention to and directing the way to such fire-escapes.

SEC. 3. Each and every such hotel shall be provided with at least one efficient chemical or other efficient fire-extinguisher on each floor for every fifteen hundred square feet or less of floor area. On each floor such extinguishers shall be placed in convenient locations in the public hallway outside of the sleeping rooms, and shall always be in condition for use; or in lieu thereof such hotels located in cities having water-works shall be

equipped with a not less than two-inch stand-pipe with two-inch hose connection on each floor and with two-inch hose of sufficient length on each floor to reach and throw water into all rooms and on all parts of such floors, which hose shall always be attached to such stand-pipe, and which stand-pipe shall always be connected with city water-mains with water turned on, or supplied with other adequate pressure.

SEC. 4. Every hotel shall provide in each bedroom or sleeping apartment above the first floor a rope of such size and character, or other appliance, as shall be prescribed by the State Board of Health. One end of such rope shall be securely fastened to an iron chain, or other appliance which shall be approved by the State Board of Health, of sufficient length to reach outside the window-sill, which chain shall be attached to the joists, window-frame or studding of the building in the room as near the window as practicable, and such chain and rope shall be kept coiled and in plain sight at all times, and shall not be covered by curtains or other obstructions. Each hotel shall provide and maintain in a conspicuous place in each bedroom or sleeping apartment above the ground floor a notice printed in large letters calling attention to such rope and chain and giving directions for its use.

SEC. 5. The shaft of each passenger or freight elevator in each hotel equipped with such passenger or freight elevator hereafter erected or remodeled shall be enclosed with an iron sheathing, brick or stone, as nearly airtight as is practicable, and with tight doors to such shaftway, or there shall be automatic trap-doors at each floor in such shaft, either of which appliances shall be built in the most approved manner for the prevention of the spreading of fires by means of such shaft.

SEC. 6. Each hotel located in any town or city having a system of sewerage shall be well drained, constructed and plumbed according to approved established sanitary principles, and all hotels shall be kept clean and in a sanitary condition throughout and free from effluvia arising from any sewer, drain, privy or other source

within the control of the owner, manager, agent or other person in charge of such hotel, and shall be provided with water-closets or privies, properly screened, for the separate use of males and females, which water-closets or privies shall be disinfected as often as may be necessary to keep them at all times in a sanitary condition.

SEC. 7. Each hotel shall hereafter provide each bed, bunk, cot or other sleeping-place for the use of guests with clean sheets of sufficient width and length to reach the entire width and length of the bed, and with the upper sheet to be of sufficient length to fold back over the bedding at the upper or head of such bed, bunk, cot or other sleeping-place.

SEC. 8. All parts of each hotel, including out-buildings, shall be kept clean and free from dust and deposits of dirt of all kinds, and all doors and windows shall be properly screened to prevent flies and insects of all kinds from getting into the building; and all beds, bunks, cots and other sleeping-places and all sleeping-rooms shall be disinfected once in each three months. Such disinfecting shall be done in accordance with rules to be prescribed by the State Board of Health.

SEC. 9. Each hotel shall furnish each guest with clean individual towels in each room so occupied by such guest, and with clean sheets and pillow-slips for the bed, bunk, cot or other sleeping-place to be occupied by such guest.

SEC. 10. In each hotel the kitchen, dining-room, cellar, office, ice boxes, refrigerators and all places where foods are prepared, kept or stored shall be kept clean, and in a sanitary condition.

SEC. 11. Each owner, manager, agent or person in charge of any hotel, who shall fail to comply with any of the provisions of this act shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not less than ten dollars nor more than one hundred dollars, and each day after sufficient notice has been given that such hotel is carried on in violation of any

of the provisions of this act shall constitute a separate offense.

SEC. 12. The State Board of Health is hereby authorized and directed to make rules and regulations necessary to carry this act into effect.

SEC. 13. The chief food and drug inspector and his duly appointed assistants and the county health officer of each county, the city health officer and the fire marshal of each city, are hereby constituted inspectors of hotels, and under the direction of the secretary of the State Board of Health each hotel in this state shall be inspected at such times as he may direct, and such inspectors are hereby granted police power to enter any hotel and any part thereof at any time to inspect and examine the same, to determine whether or not the provisions of this act are being complied with.

SEC. 14. Any person who shall obstruct or hinder an inspector in the proper discharge of his duties under this act, or who shall operate such hotel or keep the same open to the public after an inspection thereof as provided in this act, and obtaining the certificate authorized to be issued by this act, shall be guilty of a misdemeanor, and shall be punished by a fine of not less than ten dollars nor more than one hundred dollars. And each day that such hotel shall be open to the public after such inspection, and before the payment of such fees, shall be a separate offense.

SEC. 15. That each inspector upon inspecting any hotel shall report the condition of such hotel to the secretary of the State Board of Health, who shall, if such hotel complies with the laws of this state and with the rules and regulations made by the State Board of Health, heretofore in effect, issue a certificate to that effect and deliver the same to the owner, manager, agent or person in charge of such hotel, which shall be conspicuously displayed in the office of such hotel and which certificate shall show the date of such inspection.

SEC. 16. That the secretary of the State Board of Health shall keep a record showing the

date of inspection, by whom inspected, the hotel inspected, the name of the owner, keeper or manager thereof, the location of the hotel, and such other facts as the State Board of Health may require.

SEC. 17. It shall be the duty of the county attorney of each county to prosecute all persons violating any of the provisions of this act.

SEC. 18. This act shall take effect and be in force from and after its publication in the official state paper.

Approved March 2, 1909.

Published March 5, 1909.

Rules and Regulations.

At the annual meeting of the State Board of Health, held June 1, 1909, the following regulations were unanimously adopted, which regulations are made in accordance with chapter 148, Session Laws of 1909, known as the "Hotel Inspection Law":

GENERAL.

REGULATION 1.

Inspection.

The inspection of hotels shall be divided into two general subdivisions: the inspection of fire-protection apparatus and the inspection of sanitary conditions. As specifically required by law, rules and regulations, the fire marshal or fire chief is hereby charged with the supervision of construction and inspection of fire-escapes and all fire-protection apparatus and appliances of every description, including fire-escapes, gongs, ropes and rope devices, lights, notices, etc., and the local health officer is hereby charged with the inspection of sanitary conditions required under the law; and the fire marshal and local health officer shall conjointly make and certify to the inspection prior to the issuance of certificate to the hotel. The food and drug inspectors of the State Board of Health are charged with the inspection of all hotels, as they go from place to place in the performance of their duty under the food and drug law. The food and drug inspectors shall check the inspection made by the local fire marshal and local health officer, and observe if hotel has a certificate of inspection properly posted, and perform such other duties as the law and the State Board of Health may direct.

REGULATION 2.

Certificates.

The issuance of a certificate for conducting the business of a hotel, as required under the

provisions of this law, shall be conditioned upon the compliance with the law, rules and regulations as certified to by the local inspectors aforesaid, and the approval of said inspection by the secretary of the State Board of Health.

REGULATION 3.

Transient guests.

A transient guest, within the meaning of the law, shall be defined as a guest who is not a constant and continuous occupant of such hotel, or room therein, for more than a month, or not boarding by the month, or taking board and room for less time than by the month. All hotels or public lodging-houses or places where sleeping accommodations are furnished for pay to transient guests conforming to the definition herewith, shall be construed in the definition of hotel in accordance with section 1 of chapter 148, Session Laws of 1909.

FIRE PROTECTION.

REGULATION 4.

Lights.

At each opening to fire-escape there shall be placed a red light, which shall be kept burning during all hours in the night-time. If electric, such red lights shall be on an independent and distinct circuit, separate and apart from all other electrical circuits in the building. Oil lamps may be used, provided the same are equipped with a metal bowl. No other form of light is permitted to be used.

REGULATION 5.

Gongs.

One or more gongs, not less than ten inches in diameter, and large enough to be heard loudly on all parts of such floor, shall be placed near the center of the building on each floor, which gong shall be arranged to operate electrically in connection with the regular electric supply to the building, but will not be permitted to be operated

electrically in connection with dry cells. In addition to an electrical supply, or in the absence of the same, gongs shall be operated by a pull-wire. The means for operation of these gongs must be so constructed as to be operated from the office or the ground floor. The working and efficiency of these gongs shall be tested at least once every week by the hotel manager, and by inspectors on their visits.

REGULATION 6.

Watchmen.

The time-recording device to be used by the night-watchman, which is required to be provided in hotels containing fifty or more sleeping-rooms, must be a standard device approved by the National Board of Fire Underwriters, or have the written approval of the local fire marshal or fire chief; and the size and condition of the hotel shall be the guide for the frequency of patrol, subject to the fire chief's written approval; provided, that no portion of the hotel, from the basement to the top floor, shall be visited less frequently than once every hour from nine P. M. to six A. M.

REGULATION 7.

Fire-escapes.

Fire-escapes shall be well fastened and secured, and shall be of such number and of such material, design and construction as shall receive the written approval of the local fire marshal or the fire chief, as provided herein, and shall have a landing not less than six feet in length and three feet in width, guarded by iron rails, the first of which shall be not less than twelve inches from platform, and the second not less than thirty inches from platform, or in lieu thereof may be guarded by a single rail not less than thirty inches from the platform, with heavy screen-wire or grille from rail to platform, the screen or grille to be securely fastened to platform and rail, at each floor above the ground floor. Such landings shall be connected with each other by wrought or mal-

leable iron or steel stairways not less than two feet wide with steps of not less than six inches tread, placed at an angle of not more than forty-five degrees, protected by two or more well-secured guard-rails on both sides of such stairways, and reaching to the first floor above the ground floor, and with a drop-ladder not less than eighteen inches wide from the lower platform reaching to the ground. Such fire-escapes shall be sufficient if a perpendicular iron or steel ladder be used between the platforms instead of the stairways, provided such ladder is placed at the extreme outside of the platform and at least three feet from the wall of the building, and provided said ladder is equipped with iron rounds not more than fifteen inches apart and not less than three-fourths inch in thickness and the side rails of which are not smaller than three-eighths by two inches if rectangular, or one and a half inch gas-piping if round. In all cases there shall be a ladder extending from the topmost platform to at least three feet above the fire wall or coping on the roof. In no event shall ladders pass directly in front of an opening in the wall, nor shall stairways pass in front of an opening in the wall unless it is structurally impossible to avoid it. The provisions of the law as to obstructions to egress and the posting of notices must be literally observed. Provided, that all iron or steel fire-escapes which were constructed prior to the passage of the law, and which may receive the approval of the local fire marshal, may be approved as complying with the provisions of this law. Fire-escapes must be kept adequately painted at all times to preserve metal parts from rust.

REGULATION 8.

Fire extinguishers.

Each and every hotel, regardless of size, shall be provided with at least one efficient chemical fire extinguisher of approved pattern to every 1500 square feet or less of floor area on each floor. The only type of chemical fire extinguisher approved by the State Board of Health is the carbonic acid gas hand fire extinguisher, which

bears the label of approval of the Underwriters' Laboratories Incorporated. Neither chemical extinguishers of the breaking-bottle type, dry powder or hand grenades will be approved. Such extinguishers shall be kept in convenient permanent locations in the public hallways outside of the sleeping-rooms and within easy reach, and shall be charged at intervals of not more than six months. Extinguishers shall be provided with a tag, which tag shall bear the date on which the extinguisher was last charged, written in ink, and by whom charged. Hotels equipped with standpipe and hose, of not less than two inches in diameter, attached to a wet pipe, are not required to have chemical extinguishers.

REGULATION 9.

Blind rooms.

The maintaining, letting or renting for sleeping purposes of a so-called blind room or room without at least one direct exit to the outside of the building or light-wells, air-shaft or courts, is absolutely prohibited.

REGULATION 10.

Rope, or rope escape devices.

Every hotel shall provide in each room or sleeping apartment above the first or ground floor a rope not smaller than three-fourths inch in diameter, attached to an iron chain, the chain long enough to reach outside the window-sill, which chain shall be securely fastened to the casing or wall at a point not lower than three and one-half feet above the window-sill, the rope to be of sufficient length to reach the ground. Such rope must be free from knots.

In lieu of the above-described rope and chain, there may be used any form of rope fire-escape device or portable ladder approved by the State Board of Health. Such chain and rope or escape device shall be kept in plain sight at all times and shall not be covered by curtains or other obstructions. Rope must be so reeled as to insure freedom from tangle or knots when put to use, and be kept within easy reach. A card bearing

the words "FIRE-ESCAPE" in letters not smaller than three inches high, and printed in large letters, calling attention to such rope and chain or escape device, and giving directions for its use, shall be posted in a conspicuous place in each bedroom or sleeping-apartment.

REGULATION 11.

Elevator-shafts.

Passenger or freight elevators hereafter erected or remodeled shall be enclosed with an iron sheeting, brick or stone, as nearly airtight as possible and with tight doors to shut shaft, or there shall be automatic trap-doors in each floor of said shaft; provided, that in hotels more than three stories in height such elevator-shafts shall be enclosed with brick or stone, unless otherwise specifically agreed to and approved in writing by the fire marshal or fire chief and secretary of the State Board of Health.

REGULATION 12.

Gas stoves.

Wherever gas stoves are used, either for cooking or heating, they shall be supplied with permanent iron piping and vented into a properly constructed brick flue.

. SANITATION.

REGULATION 13.

Sewerage, drainage, etc.

Each hotel is required to comply literally with section 6 of the law, which section is self-explanatory.

REGULATION 14.

Individual towels, sheets, etc.

Section 7 and section 9 of the law require that each hotel shall provide each bed, bunk, cot or other sleeping-place for the use of each guest clean sheets, clean pillow-slips; also provide clean individual towels. The upper sheet provided for each bed, bunk, cot or other sleeping-

place shall be of sufficient width and length to reach the entire width and length of the bed and to fold back over the bedding at the upper or head of such bed, bunk, cot or other sleeping-place at least fourteen inches.

REGULATION 15.

Disinfection.

Section 8 of the law provides that all sleeping-rooms shall be disinfected once in each three months, such disinfecting to be done in accordance with the rules and regulations prescribed by the State Board of Health. (See rule 30.) Rooms that have been occupied by any person or persons having an infectious or contagious disease, including the disease of tuberculosis, are required to be thoroughly and efficiently disinfected with formaldehyde gas before being again occupied.

REGULATION 16.

Toilets.

Water-closets and privies shall be disinfected at least once every week, or sufficiently often to prevent obnoxious odors or effluvia arising therefrom. A simple and inexpensive solution may be prepared from chlorid of lime one pound, water three gallons. This solution to be used freely in all closets, privy vaults, sinks, drains, etc.

REGULATION 17.]

Sanitary condition of foods.

Section 10 of the law, concerning the sanitary condition of the hotel kitchen, dining-room, cellar, office, ice-boxes, and all places where foods are kept, prepared, or stored, shall be literally observed. Places and receptacles where food is kept or stored are required to be kept mouse- and rat-proof and properly screened. Serving-tables, trucks, trays, boxes, buckets, knives, saws, cleavers and other utensils and machinery used in moving, handling, cutting, chopping, mixing or serving foods are required to be thor-

oughly sterilized daily by hot water or steam and thorough cleansing, and the clothes and hands of cooks, stewards and waiters to be clean and sanitary. Canned goods when opened, or prepared foods containing any of the fruit acids, are not permitted to be stored in tin or zinc containers.

REGULATION 18.

Law enforcement.

The local fire marshal or fire chief and local health officer are hereby charged with the enforcement of the law, filing complaint with the county attorney in case of the violation of the law or the rules and regulations adopted thereunder, and notifying the State Board of Health of such action.

Published in the official state paper June 7, 1909.

I hereby certify that these rules and regulations were the rules and regulations approved and adopted by the State Board of Health June 1, 1909.

S. J. CRUMBINE, M. D.,
Secretary.

Comments, Suggestions, etc.

The following comments, suggestions and recommendations are made for the guidance of fire marshals, health officers, inspectors and hotel managers, together with rule No. 30 of the general health regulations of the State Board of Health, which is referred to in regulation 15 of the regulations of the hotel-inspection law, and which is to govern the methods and kinds of disinfection approved by the Board as applied to hotels.

FIRE-ESCAPES.

The following standard for fire-escapes as to dimensions and materials have been approved and adopted by the State Board of Health, state architect, Fire Underwriters' Inspection Depart-

ment for Kansas, state factory inspector, and a number of fire chiefs in cities of the first class, whose experience and assistance have been invaluable in arriving at a safe standard. These standards are offered as suggestions to fire marshals in the enforcement of the statutes pertaining to fire-escapes in the state of Kansas.

Kind of Escape. Under the statutes there are certain cases where it seems optional to use either stairway or ladder escape, subject to the approval of the fire marshal. It is earnestly urged in the interest of the protection of women, children and aged persons that the stairway escape be required and preferred under every reasonable circumstance.

Materials. All materials used should be of wrought or malleable iron or steel. In no case should the use of cast iron be permitted.

Balconies or Platforms. Balconies or platforms should not be less than three feet in width nor six feet in length, supported by triangular brackets and reinforced through the center of floor frame lengthwise of balcony by $1\frac{1}{2}$ -inch angle-iron riveted to frame across the bars. The frame of the balcony to be not less than $2 \times \frac{1}{4}$ -inch angle-iron, or $2\frac{1}{2} \times \frac{1}{2}$ -inch rectangular bar. The floors of all balconies to be made of flat iron bars not less than one-fourth to five-sixteenths-inch thick by one and one-fourth inches wide; such bars to be set not over one inch apart and securely riveted or bolted to the frame.

Hand and Guard-rails. All balconies to have top pipe hand-railing not less than 1 to $1\frac{1}{4}$ inches diameter, the same to be 30 inches above floor and securely fastened to the frame. A guard-rail shall be placed around balcony, not less than 12 inches from platform or floor, of 1-inch pipe, and securely fastened to frame. In lieu of guard-rail, heavy screen or grille work may be used instead of guard-rail on approval of fire marshal; the ends of top rail to be bolted ENTIRELY THROUGH THE WALL with a $\frac{3}{4}$ -inch bolt and a $4 \times 4 \times \frac{1}{4}$ -inch plate and nut on the inside.

Brackets. The brackets supporting balconies

or platforms should be not less than $2 \times 2 \times \frac{1}{4}$ -inch angle-bar or not less than $2 \times \frac{1}{2}$ -inch rectangular bar. In all cases brackets to be bolted ENTIRELY THROUGH THE WALL with not less than 1-inch bolt, with a $6 \times 6 \times \frac{1}{4}$ -inch wrought-iron plate and nut on the inside wall. Brackets supporting balconies or platforms should be spaced not to exceed $4\frac{1}{2}$ feet from center to center.

Stairways. Stairways should not be less than 2 feet wide; steps of not less than 6-inch tread. Stairways not to exceed an angle of 45 degrees and be protected by a hand-rail on each side 30 inches high at right angles from the base line of stairway. A guard-rail to be placed on either side not more than 12 inches high at right angles from base line of stairway. In lieu of guard-rail, heavy screen or grille work may be used, on approval of fire marshal. Stairways should reach to the first floor above-ground, with a drop-ladder not less than 18 inches wide from lower platform reaching to the ground. The base sills or stringers of stairway to be not less than $2 \times 2 \times \frac{1}{4}$ -inch angle-iron, or $2\frac{1}{2} \times \frac{1}{2}$ -inch rectangular bar.

Ladders. Where ladders are used to connect the platforms or balconies, such ladders to be connected at the extreme outside of the platform and at least three feet from the wall of the building. Ladders to be not less than 18 inches wide and the sides to be $2 \times \frac{3}{8}$ -inch rectangular bar or 2-inch diameter gas-pipe. The rounds to be $\frac{3}{4}$ inch thick and set not to exceed 15 inches apart. In all cases a ladder shall extend from the topmost platform to at least three feet above the fire wall or coping on the roof.

Minimum. The above standards are suggested for the minimum size of fire-escape. When by reason of probable use by large number of people the above dimensions should be increased in size and strength in accordance to the weight to be carried.

FIRE-ESCAPE DEVICES.

The following rope fire-escape devices have been approved by the State Board of Health, namely: Davy Automatic, Davy Portable, the

Clark's Traveling-man's No. 2, the Small's, the Baird Reversible, the Ever-ready, the Wilson, the Fort Wayne Automatic, the Boyd and Sanders System. While the law permits the use of ordinary rope, it is recommended that fiber-covered $\frac{5}{16}$ -inch cable be used instead of rope in all friction devices.

Note. Rope fire-escape devices which may be presented later, meeting the requirements of the Board, will be approved.

CHEMICAL FIRE-EXTINGUISHERS.

Chemical fire-extinguishers which have been approved by the National Board of Fire Underwriters have metal labels soldered to the front of the cylinders, reading:

HAND CHEMICAL EXTINGUISHER
TESTED UNDER SUPERVISION OF
UNDERWRITERS' LABORATORIES, INC.
No. ———.

Disinfection.

RULE 30. Formaldehyde gas and sulphur dioxide are the disinfectants approved by this Board. The following rules should be observed in the disinfection after all contagious and infectious diseases, including tuberculosis, typhoid fever, and puerperal fever (also for room disinfection under hotel-inspection law):

(a) *Preparation of room.* Whether formaldehyde or sulphur is to be used to disinfect the rooms, contents, etc., it is necessary, first, that the windows, doors (with the exception of the one which is to give exit to the operator), registers, openings into, keyholes and all other apertures through which air can pass, shall be sealed; in other words, the rooms should be made as near air-tight as possible. Gummed paper, put up in rolls, is made for this particular purpose; in lieu of it, however, common newspaper, cut into narrow strips and thoroughly wet, may be

used, as it will remain in position long enough for the purpose. The paper used for sealing the cracks, whether gummed or not, should be wet with a solution of formaldehyde in order to disinfect the surface upon which it is to be pasted. All surfaces should be exposed as much as possible; closet doors opened, and their contents, together with the contents of drawers, removed, scattered about, and the drawers left open; mattresses set on end, pillows, bedding, clothing, etc., suspended from lines stretched across the room, or spread out on chairs or other objects, so as to expose all sides; books opened and the leaves spread—in short, the room and its contents so disposed as to secure free access of the gas to all parts as fully as possible. Upon this preparation largely depends the thoroughness of the disinfection.

(b) *Disinfectants.* The approved disinfectant is that of formaldehyde gas or sulphur dioxid (burning sulphur).

1. *Disinfection by Formaldehyde (or Formalin).* Three methods of procuring the formaldehyde are at present in quite general use—the lamps which form formaldehyde gas by heating solidified formaldehyde; the lamps which evaporate the solution of the gas and water (and commercially known as formalin); and the sheet method, in which the solution of formalin is sprayed upon suspended sheets, from which it evaporates and diffuses throughout the room. The chief objection to the last two of these methods is, that a very long period of time is required before all the formaldehyde to be used is liberated in the space to be disinfected. This naturally allows a considerable quantity of the gas to escape by leakage, and also prevents the gas from reaching its maximum density quickly.

A fourth method, and one which has been thoroughly tested and worked out by the state boards of health, is much more efficient than the last two forms spoken of, and certainly cheaper, and within the reach of every person or community, and is a process which this Board would recommend. Earthen jars or tin containers should be used—a three-gallon jar for say a pint

and one-half of formalin, which is the necessary quantity for 1000 cubic feet of air-space, and a five-gallon jar in a room requiring from one to two quarts of formalin. If possible, these jars should have flaring tops, as the ascending fumes more quickly dissipate through the air than in a straight jar, from which the fumes go in a straight column to the ceiling. Eight ounces of permanganate powder or permanganate potash should be used to each pint of formalin. After the room has been thoroughly prepared in the manner indicated, these jars should be placed upon the floor in the center of the room, with a sufficient amount of powdered permanganate in them, and the person operating same should beat a hasty retreat, closing the door and sealing it. The chemical action generated thereby produces sufficient heat to thoroughly vaporize or liberate all the formaldehyde gas contained in the formalin solution. Active ebullition takes place, and it is sometimes wise to take the precaution to set the generator inside another larger jar in order to catch any overflow which might result from the act of boiling.

The room to be fumigated should be warmed, about 70 deg. F., and the air as moist as possible; the earthen jars or tin containers should also be warmed, or wrapped with asbestos or some material to retain the heat generated by the chemical action, as heat is an important factor in completing the liberation of the gas in order to get the maximum quantity. After the room has remained closed for five or six hours it should be opened up as freely as possible to light and air.

2. *Sulphur fumigation.* Fumigation with sulphur has long been regarded as a reliable method of disinfection, but it has been largely superseded by formaldehyde. However, it may be used when thought advisable and under certain conditions. It has the disadvantage of being a bleaching agent, and might therefore destroy many articles of clothing, furniture, etc. In old buildings, where it is impossible to seal the room or infected area, sulphur fumigation may have some advantages, in that a large amount may

be consumed, thereby perhaps securing greater penetration, and possibly with more effective results than could be obtained with formaldehyde. It also has the advantage over formaldehyde in that it kills insects, which, as is well known, are frequently conveyors of disease.

The method of preparing rooms and distributing articles therein is the same as described above, with the exception of such as would be ruined by sulphur fumes.

Close the room as tightly as possible, place the sulphur in iron pans supported by bricks, placed in wash-tubs containing a little water; set it on fire by hot coals, or with the aid of a spoonful of alcohol, and allow the room to remain closed for twelve hours.

For a room above ten feet square, at least three pounds of sulphur should be used; for larger rooms, proportionately larger quantities.

Heavy woollen clothing, silks, furs, stuffed bed covers, beds and woollen articles which cannot be treated with disinfectants should be hung in the room during fumigation, their surfaces thoroughly exposed, and their pockets turned inside out. Afterward they should be hung in the open air, beaten, and shaken.

Pillows, beds, stuffed mattresses, upholstered furniture, etc., should be cut open and their contents spread out and thoroughly fumigated.

Carpets are best fumigated on the floor, but they should be afterward removed to the open air and thoroughly beaten.

DISINFECTANT SOLUTIONS

Much of the so-called disinfection practiced is wholly inefficient and useless. The burning of coffee, tar, sulphur or other substances in the sick-room, or in any other part of the house or premises operates at most only as a deodorizer and does not destroy the germs of the disease.

It should also be known that many of the preparations offered for sale as disinfectants, germ-killers, etc., are worthless, or nearly so, and should never be relied upon.

Reliable formulas are here given of disinfectant solutions possessing the required strength

and efficiency, which may be made at much less cost than is asked for proprietary preparations.

DISINFECTANTS TO BE EMPLOYED.

For general household purposes during the continuance of a case of contagious or infectious disease, or at other times when needed, the following formulas for disinfectant solutions are both satisfactory and cheap:

Solution No. 1. Chlorid of lime (bleaching powder), one pound; water, three gallons; mix. Cost, about three cents per gallon.

Care should be taken to obtain *fresh* chlorid of lime.

This solution is so cheap that it can be used with great freedom, and it is one of the best disinfectants known. A quart or more per day may be used in an offensive vault, and such quantities as may be necessary in other places. It may be used in a sprinkler in stables and elsewhere. In a sick-room it may be used in vessels, cuspidores, etc. Sheets and other clothing used by the patient may be immersed in a pail or tub of this solution, diluted (one gallon of solution to ten of water), for two hours, or till ready for the wash-room or laundry. This solution is non-poisonous, and does not injure white clothing.

It may also be used for washing the hands or other parts of the body which may have been exposed to infection from excreta, etc.

For a free and general use in privy vaults, sewers, sink drains, refuse heaps, stables, and wherever else the odor of the disinfectant is not objectionable, this is one of the cheapest and most effective disinfectants and germicides available for general use. It should be used so freely as to wet everything required to be disinfected. Its odor does not disinfect—only covers up other odors.

Solution No. 2. Corrosive sublimate, one ounce; permanganate of potash, one ounce; water, eight gallons; mix and dissolve. Label "Poison." Cost two to three cents a gallon, when chemicals are bought by the pound. Stains fabrics, etc.

Use the same way and for the same purpose

as No. 1. The only advantage this has over No. 1 is the fact that it possesses no odor. It is poisonous, but its bright purple color will prevent its being mistaken for any other solution. It should be used in vessels, cuspidors, etc., in case of infectious or contagious disease, when solution No. 1 is objectionable on account of its odor. It is not so good a disinfectant for vaults, sink drains, sewers, etc., as the chlorid of lime solution. It should not be kept in metallic vessels.

Solution No. 3. Dissolve one drachm (60 grains or one-eighth ounce) each of corrosive sublimate and muriate of ammonia in one gallon of water. Dissolve in a wooden tub, barrel, or pail, or an earthen crock. Label "Poison." Cost about the same as No. 2.

Use for the disinfection of soiled underclothing, bed linen, etc. Mix solution with equal quantity of water and immerse articles for four hours; then wring them out and boil them.

Mixed with an equal quantity of water, solution is useful for washing the hands and general surfaces of the bodies of attendants and convalescents; the latter only by direction of the physician.

Solution No. 4. Milk of lime (quicklime). Slake a quart of freshly burned lime (in small pieces) with three-fourths of a quart of water; or to be exact, 60 parts of water by weight with 100 of lime. A dry powder of slaked lime (hydrate of lime) results. Make milk of lime not long before it is to be used by mixing one part of this dry hydrate of lime with eight parts (by weight) of water.

Air-slaked lime is worthless. The dry hydrate may be preserved some time if it is enclosed in an air-tight container. Milk of lime should be freshly prepared, but may be kept a few days if closely stoppered.

Quicklime is one of the cheapest of disinfectants. This solution can take the place of chlorid of lime if desired. It should be used freely, in quantity equal in amount to the material to be disinfected. It can be used to whitewash exposed surfaces, to disinfect excreta in the sick-

room, or on the surface of the ground, in sinks, drains, stagnant pools, etc.

Solution No. 5. Solution of formaldehyde (formalin), six ounces ; water one gallon ; mix. Cost, eight to ten cents. Contains a little less than two per cent of formaldehyde.

This solution may be used in the same manner as those above described. It has the advantage of not bleaching fabrics, and is especially good for washing furniture, woodwork, etc.

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